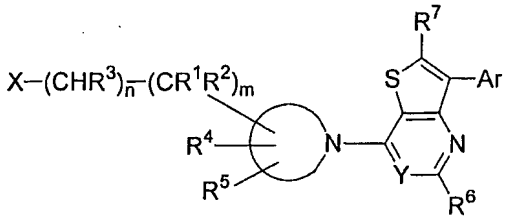
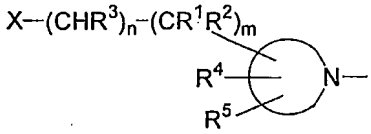
CLAIMS

1. A thienopyrimidine or thienopyridine derivative substituted with a cyclic amino group represented by the following formula [I]:



[I]

(wherein the cyclic amino group is represented by the following formula [II]:



[II]

in which the cyclic amino group is a 3- to 8-membered saturated cyclic amine or a 3- to 8-membered saturated cyclic amine bridged with C_{1-5}alkylene or C_{1-4}alkylene-O-C_{1-4}alkylene between any different two carbon atoms of the cyclic amine, which cyclic amine is substituted with a group represented by $-(CR^1R^2)_m-(CHR^3)_n-X$, R^4 and R^5 independently on the same or different carbon atoms of the cyclic amine;

X is cyano, hydroxy, $-CO_2R^8$ or $-CONR^9R^{10}$;

Y is N or CR^{11};

R^1 is hydrogen, hydroxy, C_{1-5}alkyl, C_{1-5}alkoxy-C_{1-5}alkyl or hydroxy-C_{1-5}alkyl;

R^2 is hydrogen or C_{1-5}alkyl;

R^3 is hydrogen, cyano, C_{1-5}alkyl, C_{1-5}alkoxy-C_{1-5}alkyl or hydroxy-C_{1-5}alkyl;

m is an integer selected from 0, 1, 2, 3, 4 and 5;

n is 0 or 1;

R^4 is hydrogen, hydroxy, hydroxy-C_{1-5}alkyl, cyano, cyano-C_{1-5}alkyl or C_{1-5}alkyl;

R^5 is hydrogen or C_{1-5}alkyl;

R^6 is hydrogen, C_{1-5}alkyl, C_{3-8}cycloalkyl, C_{3-8}cycloalkyl-C_{1-5}alkyl, hydroxy, C_{1-5}alkoxy, C_{3-8}cycloalkyloxy, halogen, C_{1-5}alkylthio or $-N(R^{12})R^{13}$;

R^7 is hydrogen, halogen, C_{1-5}alkyl, C_{3-8}cycloalkyl, C_{3-8}cycloalkyl-C_{1-5}alkyl, hydroxy, C_{1-5}alkoxy, C_{3-8}cycloalkyloxy, $-N(R^{14})R^{15}$, $-CO_2R^{16}$, $-CON(R^{17})R^{18}$, cyano, nitro, C_{1-5}alkylthio, trifluoromethyl or trifluoromethoxy;

Ar is aryl or heteroaryl which aryl or heteroaryl is unsubstituted or substituted with 1 or more substituents, which are the same or different, selected from the group consisting of halogen, C_{1-5}alkyl, C_{3-8}cycloalkyl, C_{2-5}alkenyl, C_{2-5}alkynyl, C_{1-5}alkoxy, C_{1-5}alkylthio, C_{1-5}alkylsulfinyl, C_{1-5}alkylsulfonyl, cyano, nitro, hydroxy, $-CO_2R^{19}$, $-C(=O)R^{20}$, $-CONR^{21}R^{22}$, $-OC(=O)R^{23}$, $-NR^{24}CO_2R^{25}$, $-S(=O)_rNR^{26}R^{27}$, trifluoromethyl, trifluoromethoxy, difluoromethoxy, fluoromethoxy, methylenedioxy, ethylenedioxy and $-N(R^{28})R^{29}$;

R^8 is hydrogen, C_{1-10}alkyl, C_{3-8}cycloalkyl, C_{3-8}cycloalkyl-C_{1-5}alkyl, aryl or aryl-C_{1-5}alkyl;

R^9 and R^{10} are the same or different, and independently are hydrogen, C_{1-5}alkyl, C_{3-8}cycloalkyl, C_{3-8}cycloalkyl-C_{1-5}alkyl, aryl or aryl-C_{1-5}alkyl; or R^9 and R^{10} form a ring selected from saturated 3 to 8 membered ring with the attached nitrogen atom, wherein one of the carbon atoms of such saturated 3 to 8 membered ring is optionally replaced by an oxygen or sulfur atom or by N-Z wherein Z is hydrogen, benzyl or C_{1-5}alkyl;

R^{11} is hydrogen, halogen or C_{1-5}alkyl;

R^{12}, R^{13}, R^{14} and R^{15} are the same or different, and independently are hydrogen or C_{1-5}alkyl;

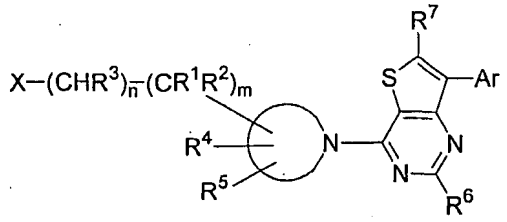
R^{16}, R^{19} and R^{25} are the same or different, and independently are hydrogen or C_{1-5}alkyl, C_{3-8}cycloalkyl, C_{3-8}cycloalkyl-C_{1-5}alkyl, aryl or aryl-C_{1-5}alkyl;

R^{17}, R^{18}, R^{20}, R^{21}, R^{22}, R^{23}, R^{24}, R^{26}, R^{27}, R^{28} and R^{29} are the same or different, and independently are hydrogen, C_{1-5}alkyl or C_{3-8}cycloalkyl;

r is 1 or 2)

, individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, pharmaceutically acceptable prodrugs thereof or pharmaceutically acceptable salts and hydrates thereof.

2. The thienopyrimidine derivative substituted with the cyclic amino group according to claim 1 represented by the following formula [III]:



[III]

(wherein X, m, n, the cyclic amino group, R^1, R^2, R^3, R^4, R^5, R^6, R^7 and Ar are as defined in claim 1), individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

3. The thienopyrimidine derivative substituted with the cyclic amino group according to claim 2 represented by formula [III], wherein X is cyano; the cyclic amino group is a 4- to 7-membered saturated cyclic amine; n is 0; m is an integer selected from 0, 1, 2 and 3; R^1, R^2, R^4 and R^5 are hydrogen; R^6 is C_{1-5}alkyl; R^7 is hydrogen or C_{1-5}alkyl; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen, C_{1-3}alkyl, C_{1-3}alkoxy, C_{1-3}alkylthio, trifluoromethyl, trifluoromethoxy and $-N(R^{28})R^{29}$ (wherein R^{28} and R^{29} are the same or different, and independently are hydrogen or C_{1-3}alkyl), individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

4. The thienopyrimidine derivative substituted with the cyclic amino group according to claim 2 represented by formula [III], wherein X is cyano; the cyclic amino group is a 6-membered saturated cyclic amine; n is 0; m is 0 or 1; R^1, R^2, R^4 and R^5 are hydrogen; R^6 is C_{1-5}alkyl; R^7 is hydrogen or C_{1-5}alkyl; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen and C_{1-3}alkyl, individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

5. The thienopyrimidine derivative substituted with the cyclic amino group

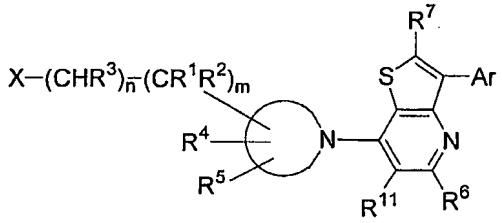
according to claim 2 represented by formula [III], wherein X is hydroxy; the cyclic amino group is a 4- to 7-membered saturated cyclic amine; n is 0; m is an integer selected from 1, 2 and 3; R^1, R^2, R^4 and R^5 are hydrogen; R^6 is C_{1-5}alkyl; R^7 is hydrogen or C_{1-5}alkyl; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen, C_{1-3}alkyl, C_{1-3}alkoxy, C_{1-3}alkylthio, trifluoromethyl, trifluoromethoxy and $-N(R^{28})R^{29}$ (wherein R^{28} and R^{29} are the same or different, and independently are hydrogen or C_{1-3}alkyl), individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

6. The thienopyrimidine derivative substituted with the cyclic amino group according to claim 2 represented by formula [III], wherein X is hydroxy; the cyclic amino group is a 6-membered saturated cyclic amine; n is 0; m is an integer selected from 1, 2 and 3; R^1, R^2, R^4 and R^5 are hydrogen; R^6 is C_{1-5}alkyl; R^7 is hydrogen or C_{1-5}alkyl; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen and C_{1-3}alkyl, individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

7. The thienopyrimidine derivative substituted with the cyclic amino group according to claim 2 represented by formula [III], wherein X is $-CO_2R^8$ or $-CONR^9R^{10}$; the cyclic amino group is a 4- to 7-membered saturated cyclic amine; n is 0; m is an integer selected from 0, 1, 2 and 3; R^1, R^2, R^4 and R^5 are hydrogen; R^6 is C_{1-5}alkyl; R^7 is hydrogen or C_{1-5}alkyl; R^8 is hydrogen or C_{1-10}alkyl; R^9 and R^{10} are the same or different, and independently are hydrogen or C_{1-5}alkyl; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen, C_{1-3}alkyl, C_{1-3}alkoxy, C_{1-3}alkylthio, trifluoromethyl, trifluoromethoxy and $-N(R^{28})R^{29}$ (wherein R^{28} and R^{29} are the same or different, and independently are hydrogen or C_{1-3}alkyl), individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

8. The thienopyrimidine derivative substituted with the cyclic amino group according to claim 2 represented by formula [III], wherein X is $-CO_2R^8$ or $-CONR^9R^{10}$; the cyclic amino group is a 6-membered saturated cyclic amine; n is 0; m is an integer selected from 0, 1, 2 and 3; R^1, R^2, R^4 and R^5 are hydrogen; R^6 is C_{1-5}alkyl; R^7 is hydrogen or C_{1-5}alkyl; R^8 is hydrogen or C_{1-10}alkyl; R^9 and R^{10} are the same or different, and independently are hydrogen or C_{1-5}alkyl; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen and C_{1-3}alkyl, individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

9. The thienopyridine derivative substituted with the cyclic amino group according to claim 1 represented by the following formula [IV]:



[IV]

(wherein X, m, n, the cyclic amino group, R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^{11} and Ar are as defined in claim 1), individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

10. The thienopyridine derivative substituted with the cyclic amino group according to claim 9 represented by formula [IV], wherein X is cyano; the cyclic amino group is a 4- to 7-membered saturated cyclic amine; n is 0; m is an integer selected from 1, 2 and 3; R^1, R^2, R^4 and R^5 are hydrogen; R^6 is C_{1-5}alkyl; R^7 is hydrogen or C_{1-5}alkyl; R^{11} is hydrogen or C_{1-5}alkyl; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen, C_{1-3}alkyl, C_{1-3}alkoxy, C_{1-3}alkylthio, trifluoromethyl, trifluoromethoxy and $-N(R^{28})R^{29}$ (wherein R^{28} and R^{29} are the same or different, and independently are hydrogen or C_{1-3}alkyl), individual isomers

thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

11. The thienopyridine derivative substituted with the cyclic amino group according to claim 9 represented by formula [IV], wherein X is cyano; the cyclic amino group is a 6-membered saturated cyclic amine; n is 0; m is 0 or 1; R^1, R^2, R^4 and R^5 are hydrogen; R^6 is C_{1-5}alkyl; R^7 is hydrogen or C_{1-5}alkyl; R^{11} is hydrogen; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen and C_{1-3}alkyl, individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

12. The thienopyridine derivative substituted with the cyclic amino group according to claim 9 represented by formula [IV], wherein X is hydroxy; the cyclic amino group is a 4- to 7-membered saturated cyclic amine; n is 0; m is an integer selected from 1, 2 and 3; R^1, R^2, R^4 and R^5 are hydrogen; R^6 is C_{1-5}alkyl; R^7 is hydrogen or C_{1-5}alkyl; R^{11} is hydrogen or C_{1-5}alkyl; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen, C_{1-3}alkyl, C_{1-3}alkoxy, C_{1-3}alkylthio, trifluoromethyl, trifluoromethoxy and $-N(R^{28})R^{29}$ (wherein R^{28} and R^{29} are the same or different, and independently are hydrogen or C_{1-3}alkyl), individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

13. The thienopyridine derivative substituted with the cyclic amino group according to claim 9 represented by formula [IV], wherein X is hydroxy; the cyclic amino group is a 6-membered saturated cyclic amine; n is 0; m is an integer selected from 1, 2 and 3; R^1, R^2, R^4 and R^5 are hydrogen; R^6 is C_{1-5}alkyl; R^7 is hydrogen or C_{1-5}alkyl; R^{11} is hydrogen; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen and C_{1-3}alkyl, individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

14. The thienopyridine derivative substituted with the cyclic amino group according to claim 9 represented by formula [IV], wherein X is $-CO_2R^8$ or $-CONR^9R^{10}$; the cyclic amino group is a 4- to 7-membered saturated cyclic amine; n is 0; m is an integer selected from 0, 1, 2 and 3; R^1, R^2, R^4 and R^5 are hydrogen; R^6 is C_{1-5}alkyl; R^7 is hydrogen or C_{1-5}alkyl; R^8 is hydrogen or C_{1-10}alkyl; R^9 and R^{10} are the same or different, and independently are hydrogen or C_{1-5}alkyl; R^{11} is hydrogen or C_{1-5}alkyl; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen, C_{1-3}alkyl, C_{1-3}alkoxy, C_{1-3}alkylthio, trifluoromethyl, trifluoromethoxy and $-N(R^{28})R^{29}$ (wherein R^{28} and R^{29} are the same or different, and independently are hydrogen or C_{1-3}alkyl), individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

15. The thienopyridine derivative substituted with the cyclic amino group according to claim 2 represented by formula [IV], wherein X is $-CO_2R^8$ or $-CONR^9R^{10}$; the cyclic amino group is a 6-membered saturated cyclic amine; n is 0; m is an integer selected from 0, 1, 2 and 3; R^1, R^2, R^4 and R^5 are hydrogen; R^6 is C_{1-5}alkyl; R^7 is hydrogen or C_{1-5}alkyl; R^8 is hydrogen or C_{1-10}alkyl; R^9 and R^{10} are the same or different, and independently are hydrogen or C_{1-5}alkyl; R^{11} is hydrogen; and Ar is phenyl which phenyl is substituted with two or three substituents, which are the same or different, selected from the group consisting of halogen and C_{1-3}alkyl, individual isomers thereof or racemic or non-racemic mixtures of isomers thereof, or pharmaceutically acceptable salts and hydrates thereof.

16. Compounds represented by formula [I] according to claim 1, which compounds are selected from the group consisting of

{1-[7-(4-Bromo-2,6-dimethyl-phenyl)-2-methyl-thieno[3,2-d]pyrimidin-4-yl]-piperidin-4-yl}-methanol,

{1-[7-(4-bromo-2,6-dimethyl-phenyl)-2,6-dimethyl-thieno[3,2-d]pyrimidin-4-yl]-piperidin-4-yl}-methanol,

2-{1-[7-(4-bromo-2,6-dimethyl-phenyl)-2,6-dimethyl-thieno[3,2-d]pyrimidin-4-yl]-piperidin-4-yl}-ethanol,

{1-[7-(4-bromo-2,6-dimethyl-phenyl)-2,6-dimethyl-thieno[3,2-d]pyrimidin-4-yl]-piperidin-4-yl}-acetonitrile,

{1-[3-(2,4-dichloro-phenyl)-5-methyl-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-methanol,

{1-[5-methyl-3-(2,4,6-trimethyl-phenyl)-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-methanol,

{1-[3-(4-bromo-2,6-dimethyl-phenyl)-5-methyl-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-methanol,

{1-[3-(4-bromo-2,6-dimethyl-phenyl)-2,5-dimethyl-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-methanol,

{1-[3-(2,4-dibromo-phenyl)-5-methyl-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-methanol,

{1-[5-methyl-3-(2,4,6-trichloro-phenyl)-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-methanol,

2-{1-[3-(4-bromo-2,6-dimethyl-phenyl)-5-methyl-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-ethanol,

2-{1-[3-(4-bromo-2,6-dimethyl-phenyl)-2,5-dimethyl-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-ethanol,

2-{1-[3-(2,4-dibromo-phenyl)-5-methyl-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-ethanol,

2-{1-[5-methyl-3-(2,4,6-trichloro-phenyl)-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-ethanol,

1-[5-methyl-3-(2,4,6-trimethyl-phenyl)-thieno[3,2-b]pyridin-7-yl]-piperidine-3-carbonitrile,

{1-[3-(4-bromo-2,6-dimethyl-phenyl)-5-methyl-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-acetonitrile,

{1-[3-(4-bromo-2,6-dimethyl-phenyl)-2,5-dimethyl-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-acetonitrile,

{1-[3-(2,4-dibromo-phenyl)-5-methyl-thieno[3,2-b]pyridin-7-yl]-piperidin-4-yl}-acetonitrile

and {1-[5-methyl-3-(2,4,6-trichloro-phenyl)-thieno[3,2-b]pyridin-7-yl]-

piperidin-4-yl}-acetonitrile.

17. An antagonist for CRF receptors, comprising a thienopyrimidine or thienopyridine derivative substituted with a cyclic amino group, a pharmaceutically acceptable salt thereof or its hydrate according to any one of claims 1 to 16, as an active ingredient.

18. Use of a thienopyrimidine or thienopyridine derivative substituted with a cyclic amino group, a pharmaceutically acceptable salt thereof or its hydrate according to any one of claim 1 to 16, for the manufacture of a therapeutic agent as an antagonist for CRF receptors.